

NOTES, ABSTRACTS, AND REVIEWS.

DISTRIBUTION OF WEATHER INFORMATION AND WARNINGS FOR THE CARIBBEAN SEA.

[Excerpts from Weather Bureau Circular of Sept. 15, 1922.]

The United States Weather Bureau has arranged with the United Fruit Co. to broadcast twice daily, beginning September 15, 1922, special weather bulletins for the benefit of Caribbean shipping from the radio station on one of Swan Islands in the western Caribbean.

The morning bulletin will be in two parts, the first to be broadcast only during the hurricane season—June to November, both inclusive. It will contain weather observations from 10 selected stations throughout the West Indies and on near-by coasts; the second part of the bulletin will contain daily forecasts of wind and weather for the Gulf of Mexico and the Caribbean west of west longitude 73°, and advices and warnings regarding the location and movement of hurricanes in the warm season and "northers" in winter. The night bulletin will be broadcast daily throughout the year and will contain forecasts, advices, and warnings of the same character as contained in the second part of the morning bulletin.

A circular giving the details of the broadcasting may be obtained on application to the Chief of Weather Bureau, Washington, D. C.

A DISTRIBUTIONAL AND ECOLOGICAL STUDY OF MOUNT RAINIER, WASH.

By W. P. TAYLOR.

[Author's summary reprinted from *Ecology*, July, 1922, 3:214-236, photo, 3 diagrs.]

1. Mount Rainier is a massive eminence, chiefly basaltic in character, with a warm, humid climate and an extremely heavy snowfall.¹ The climatic conditions result in the formation of numerous glaciers. Differences in precipitation on the different sides of the mountain exercise an important influence on the distribution of its birds, mammals, and plants.

2. The *life zone*, mapped on broad lines with *temperature* as the basic factor, and the *habitat* with its *association*, determined chiefly on *water relations*, are relied on to show the distribution of plant and animal life on the mountain.

3. Four life zones are represented, the Transition, Canadian, Hudsonian, and Arctic-Alpine. In general, the Transition zone includes areas in the southeastern part of the park below 3,000 feet; the Canadian, the heavily timbered area between 2,000 and 4,500-5,000 feet; the Hudsonian, the subalpine meadow country between 4,500-5,000 and 6,500 feet; the Arctic-Alpine, the region above timber line, 6,500 feet and over.

4. The habitats are roughly divisible into three groups: Those characterized by extreme moisture, including stream, stream border, lake, lake shore, and swamp; those characterized by moderate moisture, including meadow, forest, and burn; and those characterized by deficient moisture or of a rocky type, including alpine ridge, pumice slope, rock slide, and, tentatively, glacier.

5. The White River region, in the northeastern portion of the park, possesses several peculiarities; the upper

boundary of the Canadian zone is 500 feet higher in this region than elsewhere in the park; the White River area is noticeably drier than other parts of the park; and there are peculiarities in the fauna and flora of the region.

These peculiarities probably arise partly or largely from differences in climate induced by the topography of the Rainier region as related to the prevailing southwest winds.

6. Depth of snow seems to be more important than effective temperatures, winds, or other factors in causing timber line on Mount Rainier. The usual effects of temperature in determining the altitude of timber line on north and south slopes are minimized, apparently through the pervasive effects of humidity about the mountain.

7. It has been possible to classify tentatively 63 species of mammals and birds (33 mammals, 30 birds) as to direction of ingress; in general the mammals and birds of the higher levels on the mountain are derived from the Cascade Mountains east of Mount Rainier, while those of lower levels are derived from the coast strip to the west. Species ingressing from the east have been more successful in extending their ranges about the mountain than those from the west, probably because of the more uniform environment in the higher zones.

VARIABILITY VS. UNIFORMITY IN THE TROPICS.

In an article entitled "Variability vs. Uniformity in the Tropics," Stephen S. Visher¹ has shown that tropical climates are not as uniform as is commonly thought.

Tables are given contrasting temperature conditions of tropical stations with those of selected stations in the higher latitudes. These show that the seasonal range of temperature is greater in the Tropics than in many coast sections of the temperate zones.

The wind directions and velocities, and especially the annual rainfall are shown to be more variable in the tropics than in the higher latitudes. In view of these facts, the author questions whether it is right to give the impression that tropical climates are extremely uniform.

In connection with the above, it is interesting to note an article in *The Geographical Review*, Vol. VI, No. 3, September, 1918, pp. 240-267, entitled "The Real Temperatures Throughout North and South America," by Mark Jefferson. The facts of the actual temperatures in all America are vividly shown by means of serrated curves showing the succession of daily minimum, maximum, minimum, etc., for the hottest month and the coolest month of a particular year.

These temperature curves, for the 27 stations studied, indicate that regularity, monotonous recurrence of a fairly constant change from warm days to less warm nights, is the characteristic of tropical temperatures, and that changeability, incessant alternation of stimulating spells of heat and cold, characterize most of the temperate zones. Each level in the mountains of the torrid zone is characterized by monotonous repetition of one set of temperature oscillations. It is true that lower temperatures are found at higher altitudes, but without the sudden changes, or contrasts between winter and summer temperatures, that mark the temperate and

¹ Cf. *Mo. Weather Rev.*, July, 1918, 46 : 327-330, 8 photos.¹ *The Scientific Monthly*, Vol. XV, No. 1, July, 1922, pp. 23-35.